

# CHOPPER PARTS CATALOG



MIDWAY MFG. CO.

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## TABLE OF CONTENTS

	Page No.
GENERAL INSTRUCTIONS	1
GENERAL ADJUSTMENT INFORMATION	2
LAMP & MOTOR REPLACEMENT	3
CABINET BREAKDOWN DETAIL	4
CHOPPER, COMPONENT LAYOUT	5
CONTROL BOX ASSEMBLY	6—7
TOWER ASSEMBLY	8—9
TARGET ASSEMBLY	10—11
TAPE DECK	12—13
PLAYFIELD COMPONENTS	14—15
ADDITIONAL PARTS LIST	16
EQUIPMENT CHART	Inside Cover

### GENERAL INSTRUCTIONS FOR "CHOPPER"

### 1. INSTALLATION:

- A. Fasten leg levelers to four legs and attach to cabinet with provided bolts.
- B. Prepare helicopter for flying:
  - 1. Open both rear doors.
  - 2. Remove rear scenery panel. Four wood screws hold it in place.
  - 3. Remove shipping bracket holding helicopter to playfield.
  - 4. Attach counter weight (shipped in coin box). Position counter weight even with edge of tape and lock in place with nut. This position has been adjusted at the factory for best flying conditions.
  - 5. Reassemble rear scenery panel.
- C. The power is controlled by a switch located in the rear corner on the bottom of the cabinet. Plug into A.C. only, 115 volts, 60 cycles. In low line areas (100 volts or less), a boost in the output voltage of the transformer may be achieved by removing the wire from the 115 volt tap of the transformer and re-wiring to the 105 volt position.
- D. In the event the game is tilted or the line cord is removed, any credits accumulated will be reset to zero.

### 2. EXTENDED PLAY ADJUSTMENT:

Located on Logic Board (PC 583-904) and is adjustable from 5 to 14 hits by re-wiring jumper as indicated on the board. Extended play awards 50% additional flying time.

### COIN ADJUSTMENT:

Located on Logic Board (PC 583-904) and may be adjusted from 1 to 4 coins per play be re-wiring jumper as indicated on the board.

### PLAYS PER COIN:

Located on Logic Board (PC 583-904) and may be adjusted to 1 or 2 plays per coin by re-wiring jumper as indicated on the board.

### TIME ADJUSTMENT:

Located on Logic Board (PC 583-904) and may be adjusted at 1 minute to 2 minutes 40 seconds, (that is 1 minute 1st position, 1.20 - 1.40 - 2.00 - 2.20 - 2.40 last position), by re-wiring as indicated on the board ( $\longrightarrow$  increase).

### 6. PLAYFIELD SERVICE SWITCHES:

Located on mech panel. To service, follow instructions in back-box area.

### 7. PHOTO-CELL SENSITIVITY CONTROLS:

Located on Photo-Cell Detector (PC 583-924) on the lower back door. To increase sensitivity (makes target easier to hit), rotate controls as indicated.

### 8. VOLUME CONTROLS:

Located on Amplifier (PC 583-926) on lower back door. To increase volume, rotate as indicated.

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### GENERAL ADJUSTMENT INFORMATION FOR "CHOPPER"

These adjustments are to be made only if the game malfunctions.

### PITCH CONTROL LINK:

With the pitch control handle (right handle) at its center position (straight up), adjust the thread portion of the link until the helicopter rises vertically 'only", when power is applied (a slow drift is okay).

### 2. POWER CONTROL POT:

- A. Disconnect motor speed edge connector (PC 583-913).
- B. Adjust (5k) copter pot (left handle) for 250 ohms.
  - (1) Connect ohm meter between G-R and W-G at pot.
  - (2) Loosen set screw and remove gear.
  - (3) Rotate pot to 250 ohms.
  - (4) Replace gear, tighten set screws and connect jack at PC 583-913.
- C. Connect D.C. volt meter across copter wipers and adjust trim pot on copter motor speed (PC 583-913) to 2 V.D.C. at zero handle position. With handle at full power, meter should read 5 V.D.C.

### 3. SOUND POT ADJUSTMENTS:

- A. Remove amplifier edge connector (PC 583-926).
- B. Adjust pot to 250 ohms (left handle).
  - (1) Connect ohm meter between W-B and BLU-W at pot.
  - (2) Loosen set screw and remove gear.
  - (3) Rotate pot to 250 ohms.
  - (4) Replace gear, tighten set screw, and connect jack at PC 583-926.

### 4. SOUND POT:

- A. Remove amplifier edge connector PC 583-926.
- B. Adjust pot to maximum resistance, (approximately 6.25k ohms) (right handle).
  - (1) Connect ohm meter between wiper (center lead) and either outside lead.
  - (2) Loosen set screw and remove gear.
  - (3) Rotate pot to 6.25k ohms.
  - (4) Replace gear, tighten set screw, and connect jack at PC 583-926.

### 5. CREDIT BUTTON:

Credit switch must be adjusted to break before make. Failure to adjust switch as indicated will result in permanent damage to Logic Unit (PC 583-904).

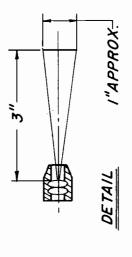
### 6. BOOM COUNTER BALANCE WEIGHT:

- A. Position dampening pad to its center position.
- B. Be sure power control pot is set properly.
- C. Position "pitch" control handle to center position.
- D. Move "power" control handle to its maximum up position (do this slowly).
- E. Helicopter must rise to its maximum up position (boom hits top cap). Adjust weight in or out to have boom hit its stop within the last 10° of handle travel.
- F. If the helicopter has a very sensitive control in the vertical flight, the dampening pad may be adjusted up to apply more pressure. NOTE: Any time time you re-adjust the dampening pad, you must re-adjust the counter balance weight (Item ``E'').

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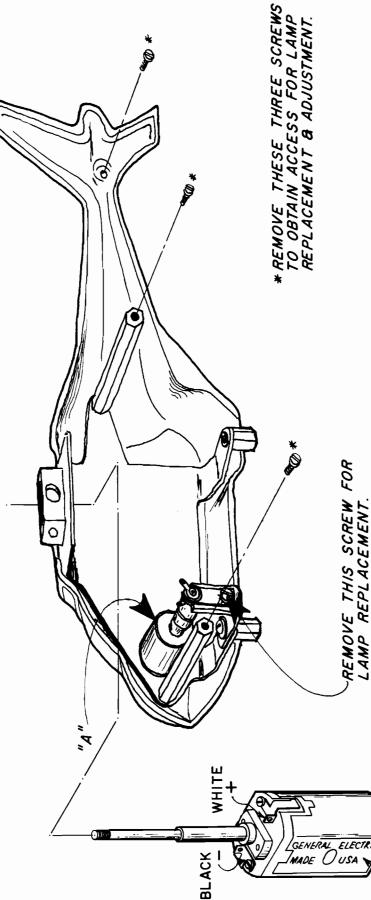
# LAMP & MOTOR REPLACEMENT

THIS IS DONE BY ROTATING THE LENS HOUSING(MARKED INSIDE THE HELICOPTER. TO OBTAIN PROPER FOCUS THE OF LIGHT SHOULD BE ADJUSTED AT A DISTANCE OF DISTANCE THE SPOT OF LIGHT SHOULD BE APPROX. ADJUSTMENT IS ACCOMPLISHED BY FOCUSING WITH CLEAR, SHARP EDGES. SEE DETAIL NOTE: 3 VOLTS MAX. FOR LAMP INSIDE





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WITH MIDWAYS 17-3-129 OR G.E. 253 NOTE: BE SURE LAMP IS IN THE DETENTED POSITION IN SOCKET. REMOVE LAMP SOCKET PULL OLD LAMP OUT & REPLACE

LAMP REPLACEMENT

CORRECTLY YOU WILL BURN OUT THE LAMP. CAUTION: / PROPER

-MOTOR LABEL

### CABINET BREAKDOWN DETAIL

NOTE: In rare cases where doorways are under  $34\frac{1}{2}$ " (width of cabinet), provisions have been made to disassemble upper parts of cabinet.

### STEP 1:

Remove background scenery "E".

### STEP 2:

Remove front and side viewing glass. Remove top cleats "A" (shown in detail), as well as inside members of front corner brackets "D". In order to remove side glass, the rear wooden retaining members "B" must be taken off.

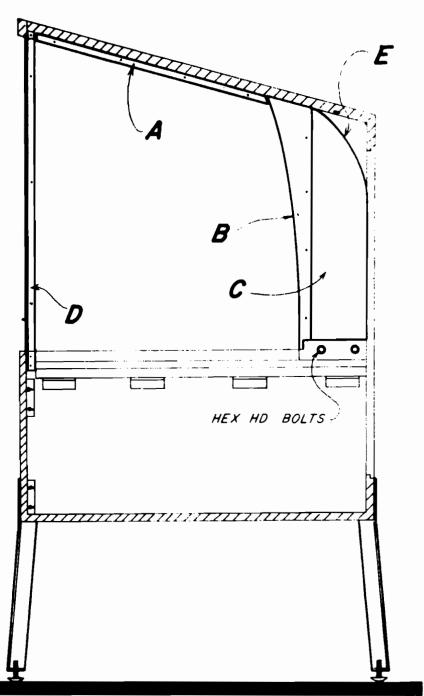
### STEP 3:

Remove top portion of cabinet Remove 4 hex. head bolts (2 on each side) from structural members "C" supporting the top. Then the front glass edge retainers should be removed. This will then allow the entire upper portion of the cabinet to be removed. Remember to disconnect the cable quick-disconnect.

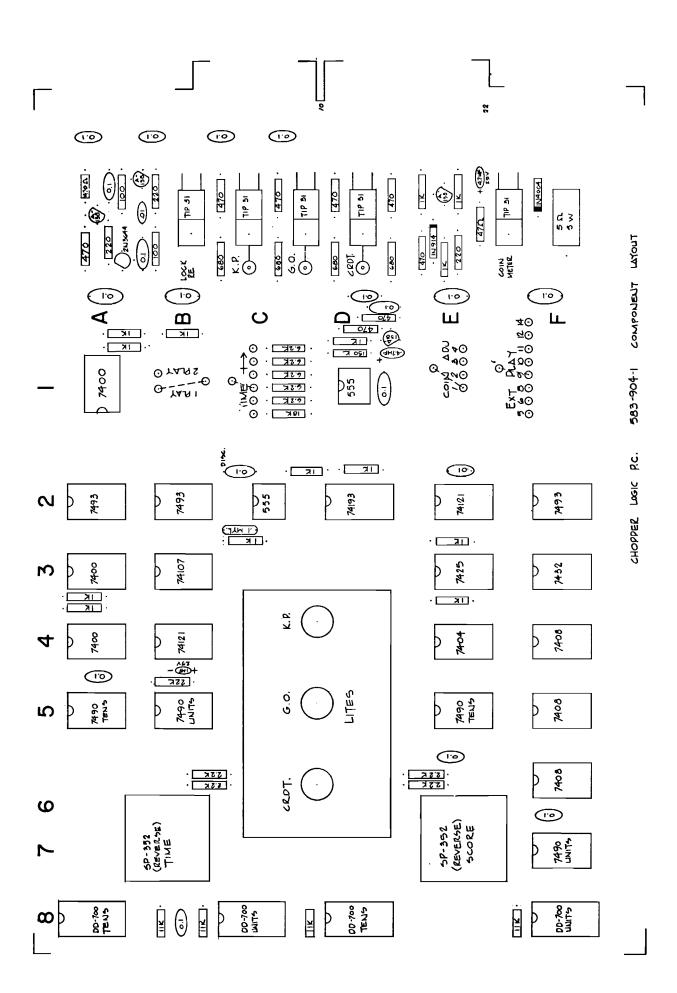
### STEP 4:

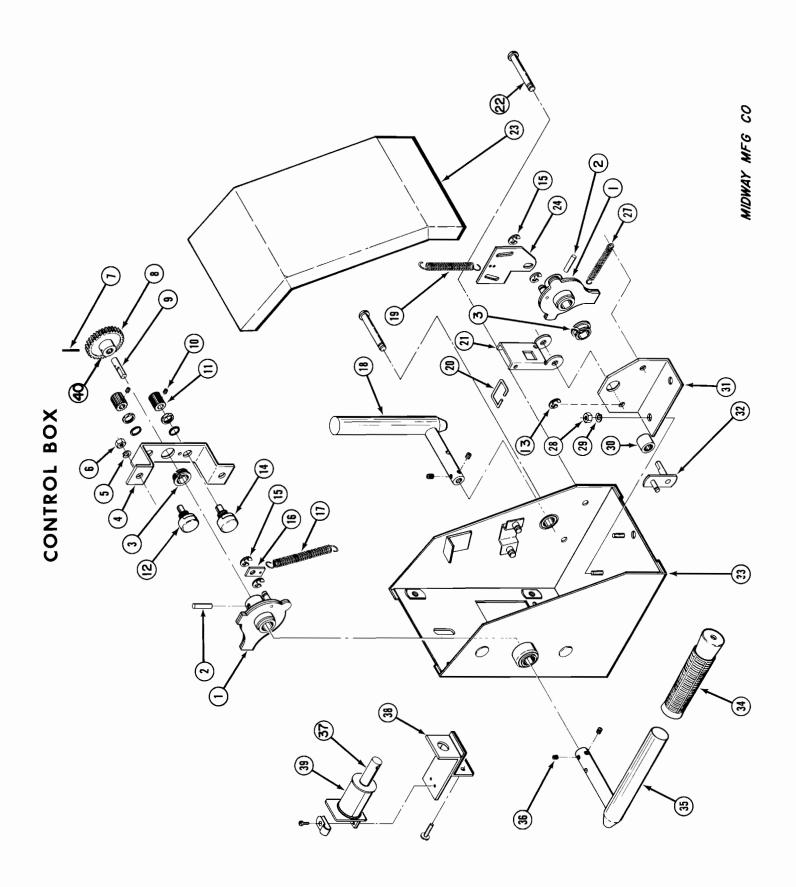
Remove the four legs. This will then allow the remaining portion of the cabinet to be rotated onto its side and will then fit thru most doorways 28" wide (minimum width).

Reverse steps for assembly.

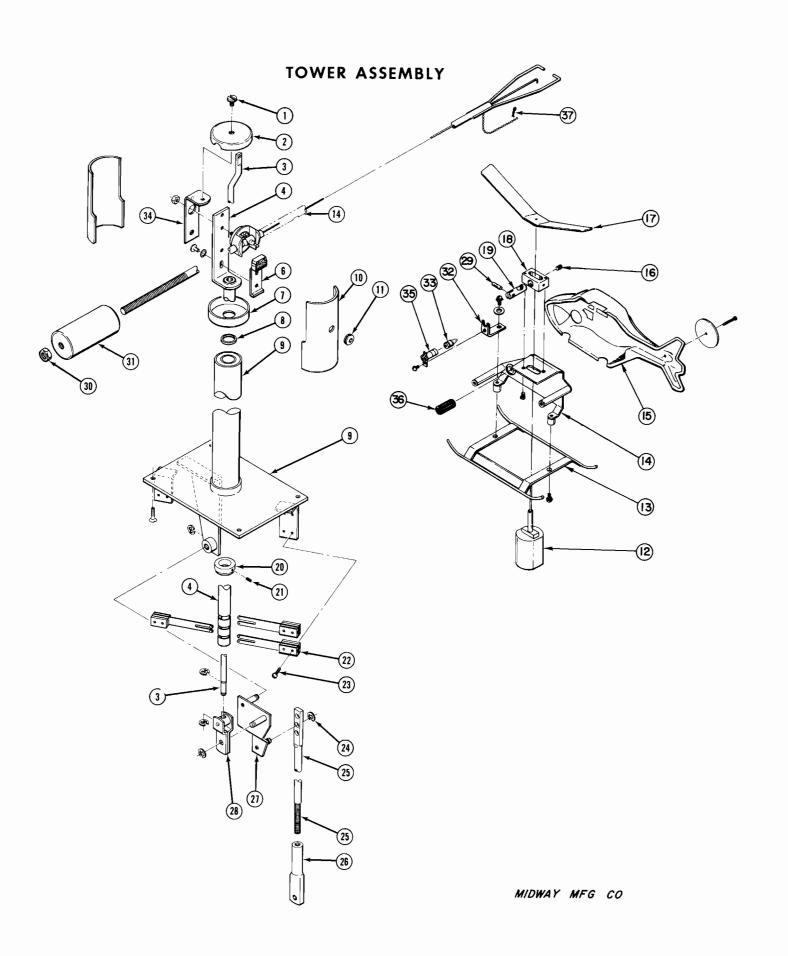


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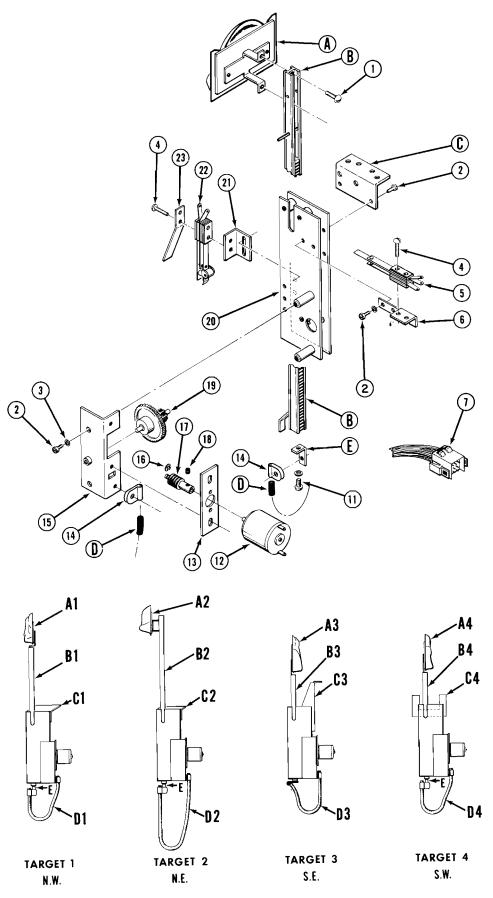
	TONDER BI PART NOMBER ONLT			
ITEM	PART Nº	DESCRIPTION	PRICE	
1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 27 28 29 30 1 32 33 34 A 35 36 37 38 39 40	583-018 17-7-115 17-42-97 583-116 17-104-05 17-103-19 17-7-62 17-42-96 583-704 17-101-309 583-723 17-13-143 17-100-25 601-131-1 10-139 583-007 10-179-1 10-538-1 600-130 583-720 583-020 583-720 583-020 583-149 10-117-2 17-103-19 17-104-05 569-712 583-110 583-004 583-004 583-005 583-705 22-001 426-1200 583-005	CAM ASSEMBLY (2 REQUIRED) DRIVE PIN 3/16 DIA. (2 REQUIRED) NYLINER (2 REQUIRED) BRACKET - SPEED CONTROL LOCKWASHER #1/4 (2 REQUIRED) ROLL PIN GEAR (48 T., 32 P.) GEAR PIN SET SCREW 8-32 X 1/4 (2 REQUIRED) PINION - 16 TOOTH (2 REQUIRED) POT 5K "E" RING (2 REQUIRED) POT 10K "E" RING (4 REQUIRED) SWIVEL BRACKET SPRING HANDLE ASSEMBLY R.H. SPRING WIRE FORM LOCK BRACKET PIN STOP (2 REQUIRED) COVER ASSEMBLY CENTERING BRACKET LOCKING SPRING LOCKNUT 1/4-20 (2 REQUIRED) ROLLER - SPACER MOUNTING BRACKET PIVOT BRACKET SUB. ASSEMBLY CONTROL BOX SUB. ASSEMBLY CONTROL BOX SUB. ASSEMBLY GRIP - BLACK R.H. GRIP - RED L.H. HANDLE ASSEMBLY L.H. 8-32 X 1/4 SET SCREWS (4 REQUIRED) PLUNGER STOP BRACKET ASSEMBLY COIL GEAR & PIN SUB. ASS'Y Part No's. 7, 8 & 9	5.80 EA20 E	



### NO. 583 CHOPPER - TOWER ASSEMBLY

	ORDER BY PART NUMBER ONLY			
ITEM	PART Nº	DESCRIPTION	PRICE	
1	17-101-593	8-32 X 1/4 SCREW	.20 EA.	
2	600-128	TOP	.60 EA.	
3	583-719	CONTROL ROD	1.40 EA.	
3 4 5 6 7 8 9	583-015	BOOM SUPPORT ASSEMBLY	14.40 EA.	
5	583-027	BOOM ASSEMBLY	21.60 EA.	
6	583-051	BRACKET & PAD ASSEMBLY	1.40 EA.	
7	600-127	CUP BOTTOM	.50 EA.	
8	17-104-34	5/8 X 7/16 X 1/16 WASHER	.20 EA.	
	583-016	TOWER TUBE SUB. ASSEMBLY	10.60 EA.	
10	600-129-1	ENCLOSURE (2 REQUIRED)	1.20 EA.	
11	17-085-41-40	GROMMET - RUBBER	.20 EA.	
12	583-023	MOTOR ASSEMBLY	17.40 EA.	
13	583-011	SKID ASSEMBLY	4.00 EA.	
14	583-022	CHASSIS ASSEMBLY	5.40 EA.	
15	583-025	HELICOPTER BODY KIT	10.00 EA.	
16	17-101-302	6-32 X 3/16 LG. SET SCREW	.20 EA.	
17	17-193-42-37	HELICOPTER PROP.	1.10 EA.	
18	583-708	BLOCK, MOTOR PIVOT	6.00 EA.	
] 19	583-712	PIVOT PIN	2.30 EA.	
20	600-733	COLLAR	1.50 EA.	
21	17-101-302	6-32 X 3/16 SET SCREW	.20 EA.	
22	583-028	WIPER ASSEMBLY (3 REQUIRED)	2.60 EA.	
23	17-101-520	5-40 X 3/8 PAN H.M.S.	.20 EA.	
24	17-100-18	"E" RING	.20 EA.	
25	601-705-1	LINK - HORIZONTAL	3.00 EA.	
26	600-724-1	ADJ. LINK	2.10 EA.	
27	583-008	BELL CRANK SUB. ASSEMBLY	1.40 EA.	
28	601-105	PIVOT BRACKET S. A.	2.40 EA.	
29	600-707	PIN	.42 EA.	
30	17-103-18	1/4-20 HEX. NUT	.20 EA.	
31	600-727	COUNTER BALANCE WEIGHT	3.80 EA.	
32	583-141	MOUNTING BRACKET, SOCKET	1.10 EA.	
33	17-3-129	LAMP G.E. #253 2.5V	3.20 EA.	
34	583-130	COVER BRACKET	.60 EA.	
35	17-31-22	SOCKET	1.40 EA.	
36	583-024	LENS TUBE ASSEMBLY	9.00 EA.	
37	583-026	CHAIN ASSEMBLY	.40 EA.	
	583-021	COMPLETE HELICOPTER ASSEMBLY	64.90 EA.	

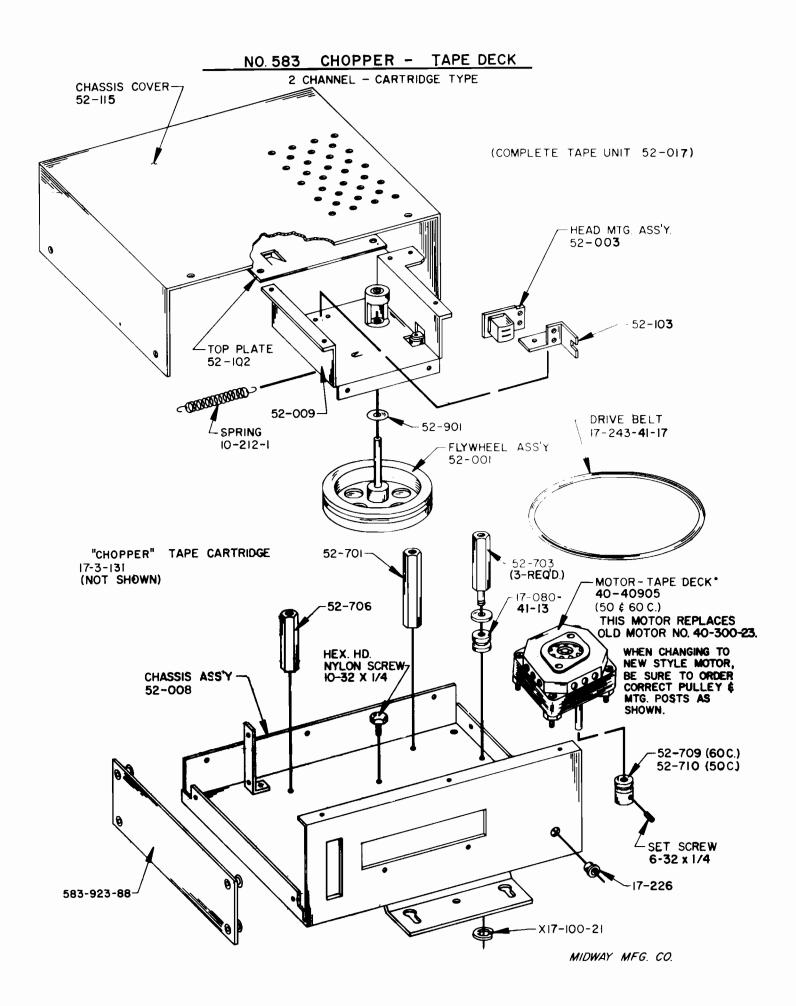
### TARGET ASSEMBLY



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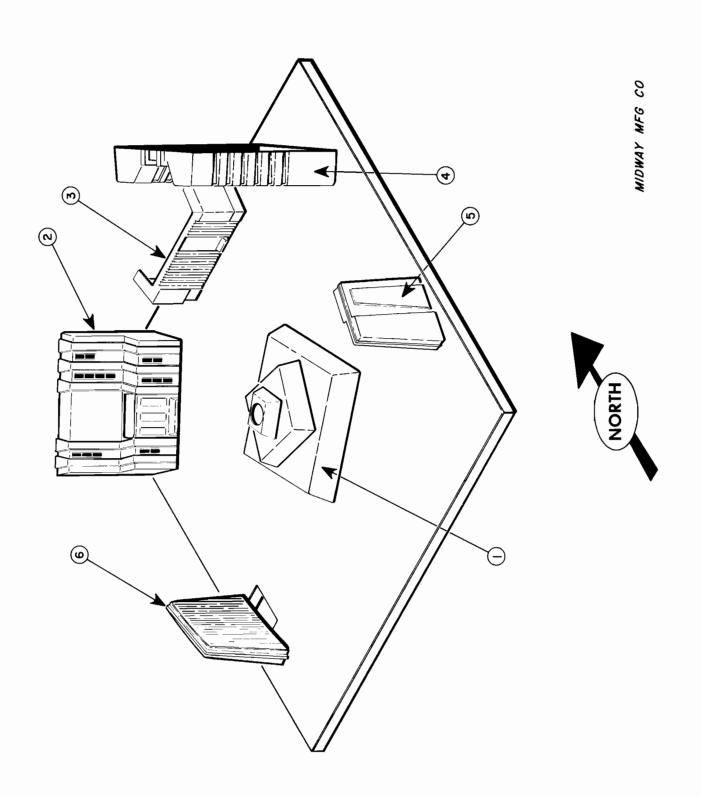
### NO. 583 CHOPPER - TARGET ASSEMBLY

ITEAA	DART 110	DESCRIPTION	DDICE
ITEM	PART Nº	DESCRIPTION	PRICE
1 2 4 5 6 7 11 12 13 14 15 16 17 18 19 20 21 22 23 A 4 B B B B B B B B B B B B B B B B B B	17-101-569 17-101-555 17-101-527 583-049 583-113 17-21-36 17-101-612 17-3-127 583-105 17-42-02 583-036 17-100-12 583-037 17-101-320 583-038 583-031 583-011 583-047 90-126-1 583-044 583-045 583-046 583-045 583-035 583-035 583-035 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-125 583-034 583-034 583-034 583-034 583-034 583-034 583-034 583-034 583-045 583-035 583-035 583-036 583-036 583-039 583-041 583-042	6-32 X 1/2 OVAL HD. SCREW (2 REQUIRED)  #6 X 5/16 HEX. HD. S/T M.S. (6 REQUIRED)  #5-40 ROUND HD. M.S. (4 REQUIRED)  LIMIT SWITCH ASSEMBLY (TOP)  LIMIT SWITCH BRACKET  9 POINT MALE AMP HOUSING  8-32 X 3/8 PAN HD. – MONEL M.S.  MOTOR – TARGET  MOTOR PLATE  3/16 CLAMP (2 REQUIRED)  BRACKET BEARING & MOTOR SUB. ASS'Y.  "E" RING  WORM ASSEMBLY  #4-40 X 1/8 LG. SOCKET SET SCREW  GEAR ASSEMBLY  TARGET UNIT SUB. ASSEMBLY  LIMIT SWITCH BRACKET  LIMIT SWITCH ASSEMBLY (BOTTOM)  SWITCH BACKUP STRIP  SPACE CREATURE #1 ASSEMBLY  SPACE CREATURE #2 ASSEMBLY  SPACE CREATURE #2 ASSEMBLY  SPACE CREATURE #2 ASSEMBLY  SLIDE BAR ASSEMBLY  SLIDE BAR ASSEMBLY  SLIDE BAR ASSEMBLY  SLIDE BAR ASSEMBLY  MOUNTING BRACKET  MOUNTING BRACKET  MOUNTING BRACKET  MOUNTING BRACKET  MOUNTING BRACKET  EXTENSION SPRING  EXTENSION SPRING  EXTENSION SPRING  STRAIN RELIEF BRACKET  COMPLETE #1 TARGET N.W.  COMPLETE #2 TARGET N.E.  COMPLETE #4 TARGET S.E.  COMPLETE #4 TARGET S.E.	.20 EA. .20 EA. .20 EA. .20 EA. .30 EA. .20 EA. .40 EA.



### NO. 583 CHOPPER - TAPE DECK (2 CHANNEL)

ITEM	ORDER BY PART NUMBER ONLY			
	PART Nº	DESCRIPTION	PRICE	
1 X 1 X 1 X 1 X 1 X 1 X 1 X 1 X 1 X 1 X	10-212-1 17-3-131 17-080-41-13 17-100-21 17-226-42-16 40-40905 52-001 52-003 52-008 52-009 52-115 52-102 52-103 52-115 52-701 52-703 52-706 52-709 52-710 52-901 568-048	SPRING – DETENT TAPE CARTRIDGE RUBBER GROMMET "E" RING (7/32") PLASTIC SNAP BUSHING MOTOR – TAPE DECK (50 & 60C.) 1600 RPM FLYWHEEL ASSEMBLY HEAD MOUNTING ASSEMBLY CHASSIS ASSEMBLY BEARING PLATE ASSEMBLY COMPLETE TAPE UNIT W/O CARTRIDGE TOP PLATE TAPE GUIDE CHASSIS COVER MOUNTING POST (2–11/16" LG.) MOTOR MOUNTING POST (3 REQUIRED) MOUNTING POST (1–1/2" LG.) MOTOR PULLEY (60C.) MOTOR PULLEY (50C.) WASHER – SPECIAL TAPE DECK MOUNTING BRACKET ASSEMBLY (2 REQUIRED) NOT SHOWN TAPE DECK PRE-AMP P.C.	.20 EA. 8.00 EA20 EA20 EA20 EA. 16.00 EA. 9.50 EA. 5.80 EA. 7.20 EA. 10.00 EA. 95.00 EA. 1.20 EA80 EA20 EA20 EA70 EA260 EA20 EA70 EA70 EA70 EA.	



### NO. 583 CHOPPER - PLAYFIELD COMPONENTS

	ONDER BY PART NOMBER ONET			
ITEM	PART Nº	DESCRIPTION	PRICE	
1 2 3 4 5 6	583-917 583-918-1 583-918-3 583-918-4 583-918-5 17-9-96 17-9-99 17-9-100 17-9-101 17-9-151 17-9-152 17-9-153	VACUUM FORMED PLAYFIELD BUILDING, VACUUM FORMED - N. BUILDING, VACUUM FORMED - N.E. BUILDING, VACUUM FORMED - S.E. BUILDING, VACUUM FORMED - S.W. LYCHEN, GREEN (NOT SHOWN) TREE (NOT SHOWN) TREE (NOT SHOWN) TREE (2 REQUIRED) (NOT SHOWN) TOY CARS (NOT SHOWN) TOY CARS (NOT SHOWN) TOY CARS (NOT SHOWN)	35.00 EA. 8.00 EA. 8.00 EA. 8.00 EA. .20 EA. .60 EA. .60 EA. .1.40 EA. 1.40 EA.	

### NO. 583 CHOPPER - ADDITIONAL PARTS LIST

ITEM	PART Nº	DESCRIPTION	PRICE
		COIL	2.40 EA.
	CD-24-300 G-30-2000D	LOCK & HIT RELAY COILS (2 REQUIRED)	2.40 EA. 2.00 EA.
	M-34-2400	RELAY COILS (6 REQUIRED)	2.40 EA.
	M-645-120	PROGRAM UNIT	6.00 EA.
	MT-43	60 CYCLE TRANSFORMER	35.00 EA.
]	MT-44	50 CYCLE TRANSFORMER	39.00 EA.
	17-3-102	6V. ENM COUNTER	10.80 EA.
	17-3-102	FLUORESCENT LAMP 30"	5.20 EA.
	17-41-576	GASKET	.20 EA.
l	17-034-32-05	ON/OFF SWITCH	.90 EA.
ŀ	17-050-5-46	LOCK (1350) WITH KEYS	3.40 EA.
	17-093-102-48	,	40 EA.
	17-175-3-32	4'' DIAMETER SPEAKER (2 REQUIRED)	5.40 EA.
- 1	17-257-3-65	A.C. LINE CORD (16 FT.)	4.60 EA.
ĺ	549-128	GRILL (2 REQUIRED)	1.00 EA.
l	552-170	( 11	
	567-106-1		
1	582-100	VENT GRILL	
	583-054	STEP-UP DRUM UNIT ASSEMBLY COMPLETE	.70 EA. 18.90 EA.
	583-073		
	583-107	SCORE BILLBOARD FRAME	22.00 EA. 1.90 EA.
	583-145	COIN BOX COVER	1.40 EA.
	583-146	COIN BOX	6.40 EA.
	583-900	GLASS (FRONT)	16.60 EA.
	583-900-1	GLASS (SIDES)	14.40 EA.
	583-901	SCORE PLEX.	4.60 EA.
	583-904-1-88	GAME LOGIC BOARD	200.00 EA.
	583-913-88	COPTER MOTOR SPEED	59.00 EA.
	583-919	SCENERY BACKGROUND	20.40 EA.
	583-922-88	TARGET MOTOR SPEED	114.00 EA.
	583-924-1-88	PHOTO DETECTOR	64.80 EA.
	583-925-88	POWER SUPPLY	48.00 EA.
	583-926-88	AMPLIFIER	67.00 EA.

### CHOPPER EQUIPMENT CHART

COIL	PER GAME	APPLICATION	
A-26-1200	1	Handle Release Coil.	
CD-24-300	1	Program Unit ADVANCE Coil.	
G-30-200 DC.	2	Lock and Hit Relay Coils.	
M-34-2400 DC.	6	#1, #2, #3, #4 Target, Program and Extended Play Relay Coils.	
MISCELLANEOUS			
MT-43	1	60 Cycle Transformer	
MT-44	1	50 Cycle Transformer	
17-3-127	4	Target Motors 6000 RPM. D.C.	
40-40905	1	Tape Deck Motor 1600 RPM.	
583-023	1	Copter Motor 3000 RPM. D.C.	
	PRINTED CIRCUITS		
M-465-120	1	Program Unit	
583-904	1	Logic Serial #101 — #177	
583-904-1	1	Logic Serial #178	
583-913	1	Copter Motor Speed	
583-922	1	Target Motor Speed	
583-923	1	Pre-Amp	
583-924	1	Photo Detector	
583-925	1	Power Supply	
583-926	1	Amplifier	